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(54) Title: IMPROVED METHODS FOR DETECTING AND MEASURING SPECIFIC NUCLEIC ACID SEQUENCES

(57) Abstract: The invention provides novel oligonucleotides and methods of using the same for detection or measurement of specific nucleic acid molecules. The invention also features nucleic acid arrays comprising the oligonucleotides of the invention. An oligonucleotide of the invention comprises (1) a reporter-binding sequence capable of hybridizing to a fluorophore-labeled reporter sequence and (2) a hairpin-forming sequence capable of forming a stem-loop. Formation of the stem-loop modifies (e.g., quenching) the fluorescence signals of the reporter sequence when the reporter sequence is hybridized to the oligonucleotide. This can be achieved, for example, by bringing one or more guanine based in the oligonucleotide into close proximity to the fluorophore(s) of the reporter sequence by virtue of the formation of the stem-loop. Disruption of the stem-loop, such as by hybridization of a target sequence to at least part of the hairpin-forming sequence, produces a detectable change in the fluorescence signals.

WO 2005/047468 A2